[JP,2736943,B]

(57) [Claim(s)]

[Claim 1] In the transfer paper which prepared the record layer which has the lamination of at least one or more layers on the base material Or 100 weight sections content is carried out. the synthetic silica whose specific surface area is 20 thru/or 600m2/g at the maximum surface of this record layer -- the inside of the pigment 100 weight section -- 30 -- And the transfer paper for electrophotography with which the amount of coating is characterized for the coating liquid which blended 10 thru/or 50 weight sections for the binder to the pigment 100 weight section by 5 thru/or carrying out 50 g/m2 coating by desiccation solid content per one side using the cast coating method.

[Claim 2] The transfer paper for electrophotography according to claim 1 characterized by the 75-degree mirror plane blank paper glossiness on the front face of coating being 50% or more.

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the transfer paper of high gloss which fits the printer and copying machine of an electrophotography method especially about the transfer paper for electrophotography.

[0002]

[Description of the Prior Art] In general commercial printing and general high-class printing, offset printing is in use, and coated paper, such as art paper, coat paper, and a cast-coated paper, is mainly used. Since this has the very smooth front face of coated paper, when a blanket roll is contacted at the time of printing, it is because metastatic [of the ink from a roll to coated paper] is good, the repeatability of an image being high and the gloss of an image are high and the repeatability of a color is good. On the other hand, the actual condition is that such coated paper generally is not used as a transfer paper for electrophotography. Since coated paper is dramatically smooth and it is stuck to a photo conductor and homogeneity as this reason at the time of a copy etc., the good toner imprint image should be obtained by the theory top, but when it applies to a copying machine etc. actually, there is a report that an image is ruined (the paper PA technical Times, 27, No.4 (1984)31-36).

[0003] It is one of the cause of the that a blister (blistering of a coating layer) generates this in the coated paper for printing smooth since it is fixed to the image of an electrophotography method by heat (JP,62-198876,A). Since this phenomenon has the low permeability of the coated paper for printing, the moisture in coated paper serves as

a steam, and when carrying out heating expansion, it is supposed that it is it because paper separates. Moreover, when the coated paper for printing is used for the transfer paper for electrophotography, since a front face is smooth, a slip is produced between rolls, or it is easy to produce a trouble in performance traverse by the weakness of the waist, or curl. Thus, the usual coated paper for printing is what designed the form so that a printability may be satisfied, and it is not designed so that the transfer paper fitness for electrophotography used for the printer and copying machine of an electrophotography method may be satisfied.

[0004] Technical issues of the coated paper for printing, such as this, are solved and begun, and it is thought that the activity to the transfer paper for electrophotography of coated paper becomes effective also as an approach of obtaining a high definition image. since grant of the Takahira slippage on the front face of coated paper is generally performed by crushing a front face by the high pressure using a supercalender etc. -- quality of paper ---like, as compared with paper of fine quality, the waist is weak, and a consistency becomes high and lacks coated paper at a feeling of volume (there is no **) -- etc. -- it is inferior at the point.

[0005] Although there are some (JP,57-53592,B, JP,57-55139,B, JP,58-26026,B) which carried out coating of the coating liquid which makes high electric resistance resin a subject as an application to the transfer paper for electrophotography of coated paper, since there are few amounts of coating and smoothness's are low, for high definition, it is not suitable for a regular paper soon. Moreover, since there are few pigment loadings to a binder as compared with the common coated paper for printing, and the high smoothness of the coated paper average for printing is not obtained only by making [many] the amount of coating and troubles, such as blocking, are produced between forms in this case, generally as an object for electrophotography, it is unsuitable. In addition, in order to prevent a blister, there is also an example, such as setting the surface average of roughness height of coated paper to 2.0 micrometers or less, and making air permeability into 4000 or less seconds, (JP,62-198875,A, JP,62-198876,A).

[0006] There is an example, such as preparing it in both sides of the stencil which has specific air permeability as an approach of otherwise preventing a blister 2-5 g/m2, using as the amount of coating the good coating layer of the steam moisture permeability adjusted to the range of moisture-vapor-transmission 50-500g/m2 and 24hr, (JP,1-245265,A). However, blank paper glossiness was low, and since this etc. was graduated by the supercalender, it did not result in about the same waist and ** as paper of fine quality, and there were few amounts of coating and near and sufficient blank paper glossiness were not obtained by the regular paper, it was insufficient for

considering as about the same image quality as high-class printing paper.

[0007] In order to improve faults, such as this, we set to invention of Japanese Patent Application No. No. 131253 [two to] previously. The result of having repeated examination about the image quality of a form about aging of the product in the relevance and the system of moisture, air permeability, and image quality of a form, Into coating liquid, pigment weight makes the interior contain the non-film formation nature resin which has an opening five to 25% of the weight, moisture is made into 4 - 6% in coated paper, and the consistency of coated paper is further made into three or less 1.1 g/cm for air permeability 4000 or less seconds. It indicated that the coated paper which the manufacture of the product by which quality was stabilized of is attained, and is excellent in performance traverse, and has a good image was obtained. However, it did not result in about the same image quality as high-class printing paper, but it is lower than the glossiness of the blank paper section, and it was [especially the glossiness of the halftone section applied this etc. to the solid section from the halftone section, and] still inadequate for obtaining high image glossiness to homogeneity.

[0008]

[Problem(s) to be Solved by the Invention] This invention improves faults, such as this, and does not have a blister in the printer and copying machine of an electrophotography method, and blank paper glossiness is to offer the coated paper for an electrophotography imprint with which an image with the glossiness of the image section, especially the glossiness of the halftone section higher than the glossiness of the blank paper section is obtained highly.

[0009]

[Means for Solving the Problem] In the transfer paper which prepared the record layer which has the lamination of at least one or more layers on the base material in order that this invention might solve the aforementioned technical problem 30 thru/or the 100 weight sections are contained for the synthetic silica whose specific surface area is 20 thru/or 600m2/g in the pigment 100 weight section on the maximum surface of this record layer. The coating liquid which blended 10 thru/or 50 weight sections for the binder to the pigment 100 weight section is related with 5 thru/or the transfer paper which carried out 50g[/m] 2 coating with the dry weight per one side by the cast coating method. Furthermore, that whose 75-degree specular gloss on the front face of coating is 50% or more starts the transfer paper which has the still more desirable description.

[0010] In this invention, if data smoothing (JP,62-198876,A) of the front face of the coated paper which carried out 30 weight sections combination of the synthetic silica in the pigment 100 weight section is only carried out by the supercalender, the waist of

paper will become weak and sufficient smooth nature and blank paper glossiness will not be obtained. Moreover, the permeability of paper falls and it becomes the cause of a blister. Furthermore, the glossiness of the image section, especially the image glossiness of the halftone section become lower than the glossiness of the blank paper section, and it is ****. On the other hand, a blister is controlled without blank paper glossiness being high, and there being no lowering of the waist of paper, and spoiling the permeability of paper by preparing a coating layer by the cast coating method, and image glossiness, especially the image glossiness of the halftone section improve substantially.

[0011] Although the detail of this reason is not certain, the specific surface area of the synthetic silica used by this invention to the specific surface area of the pigment generally used for the coating of coated paper not exceeding 2-3m2/g and at most 10m2/g is farther [than the pigment large / dramatically / and generally used with 20m2/g thru/or 600m2/g] large. An opening increases dramatically in this record layer by containing the synthetic large silica of specific surface area in a record layer. By absorbing moderately the toner fused to this opening, the irregularity on the front face of an image decreases, surface scattered reflection decreases, and it is guessed that image glossiness becomes high. Consequently, in the cast-coated paper containing a synthetic silica, it succeeded in the thing with image glossiness higher than blank paper glossiness especially acquired for a transfer paper with the high image glossiness of the halftone section highly [blank paper glossiness]. The thing to the 2/g-th 300m place is suitable for especially the specific surface area of a synthetic silica. When specific surface area is larger than 600m2/g, a reason is not certain, but since the image glossiness of the halftone section becomes lower than the glossiness of the blank paper section especially, it is not suitable for this invention.

[0012] The synthetic silicas used by this invention are silicic acids which is generally called amorphous silica, an amorphism silica, a silicic acid anhydride, a water silicic acid, an impalpable powder silica, or white carbon, consist of the network structure of Si-O, and do not have the fixed crystal structure. Specific surface area uses the synthetic silica of 20m2/g thru/or 600m2/g from a viewpoint of the absorptivity of the fused toner. The synthetic silica used by this invention is not limited to especially the manufacture approaches, such as a wet method, dry process, and the aerogel method. The loadings of the synthetic silica in coating liquid are 30 weight sections thru/or the 100 weight sections in the pigment 100 weight section. When there are few loadings of a synthetic silica than 30 weight sections, it becomes inadequate absorbing to the inside of the record layer of the fused toner, especially the image glossiness of the halftone section becomes lower than the glossiness of a blank paper.

[0013] Although a pigment can be further used together to the above-mentioned pigment, especially the class is not limited. As a pigment which can be used together, they are kaolin clay, whiting, precipitated calcium carbonate, an aluminum hydroxide, a satin white, a titanium dioxide, baking clay, a zinc oxide, a barium sulfate, talc, colloidal silica, etc. at an inorganic pigment. As an organic pigment, a polyvinyl chloride besides acrylic resin, such as styrene resin, such as polystyrene and poly methyl styrene, a polymethyl methacrylate, and a polyacrylonitrile, a polycarbonate, etc. are illustrated, and this etc. can be used together at a rate of arbitration. Since what has the tabular shape of particle, such as kaolin clay, reduces permeability and causes a blister, an inorganic pigment takes caution to it. At an organic pigment, styrene resin, acrylic resin, or the styrene-acrylic copolymer resin is desirable in respect of a degree of hardness, resiliency, thermal resistance, etc., and the smooth nature on the front face of coating tends to come especially out of the minute empty capsid which consists of a polystyrene or styrene-methyl-methacrylate copolymer, and it is effective in consistency lowering of a coating layer.

[0014] independent [in the resin with which adhesive strength with a pigment and a stencil does not cause blocking between forms strongly, an emulsion, a latex, and naturally-ocurring polymers] as a binder -- or it can be mixed and used. For example, there are fibrin derivatives, such as starches, such as polyvinyl alcohol, an oxidized starch and esterification starch, enzyme denaturation starch, and cation-ized starch, casein, soybean protein, a carboxymethyl cellulose, and hydroxyethyl cellulose, styrene-acrylic resin, styrene-butadiene system resin, vinyl acetate system resin, acrylic resin, etc.

[0015] In addition, it is also possible to blend fluorescent dye in order to blend a color in order to adjust a hue, or to raise the feeling-whiteness of **. Furthermore, little addition of the various assistants, such as a dispersant, a defoaming agent, a release agent, pH regulator, lubricant, a water retention agent, and antiseptics, can be carried out if needed into coating liquid. The loadings of the binder under coating liquid presentation are 10 weight sections thru/or 50 weight sections to the pigment 100 weight section. If paint film reinforcement becomes weak and exceeds 50 weight sections when the loadings of a binder are under 10 weight sections, the air permeability of coated paper will become high too much, and will cause a blister.

[0016] the amount of coating -- the dry weight per one side -- 5 - 50 g/m2 -- it becomes 8 - 30 g/m2 preferably -- as -- an on-machine or an off-machine coating machine -- a monolayer -- or multilayer coating is carried out. When there are few amounts of coating than 5g/m2, the coat on the front face of a stencil cannot become inadequate, and high

blank paper glossiness cannot be obtained. Moreover, when the amount of coating exceeds 50 g/m2, the consistency of paper increases, air permeability becomes high, generating of a blister and the waist of paper become weak, a trouble is produced in performance traverse, and there is a fault, such as losing the function as a transfer paper for electrophotography. As the manufacture approach by the cast coating method, although the solidifying method, the re-humidity method, and the humidity method are learned, it is applicable to this invention by any approach. It is not limited especially about the coating method for obtaining a record layer, and coating methods, such as a general coating method, for example, various blade coating, roll coating, the Ayr knife coating, and bar coating, can be used.

[0017] Although each salt, such as the calcium of formic acid, an acetic acid, a citric acid, a tartaric acid, a lactic acid, a hydrochloric acid, and a sulfuric acid, a potassium, zinc, barium, lead, magnesium, cadmium, and aluminum, way sand, a way acid, etc. are common as a coagulant used when using the cast coating method by the solidifying method, it is not limited especially. Moreover, the binder is effective for improvement in a coating rate, or improvement in the finishing condition of a coating side, if what is solidified on coagulants, such as this, and an effectiveness target is chosen and used. Although acid and neutral paper of fine quality, a report grade paper, etc. can be used as a stencil, in order to have the coating fitness as a coating stencil, the form which adjusted combination of a raw material, adjustment, and manufacture conditions by the well-known approach (JP,55-47385,B) is desirable.

[0018]

[Example] Although an example is given to below and this invention is more concretely explained to it, this invention is not limited to examples, such as this. In addition, all the sections in an example show the weight section. Measurement in an example was performed as follows.

[0019] (1) Consistency : JIS It applied to the approach of P8118 correspondingly.

(2) Air permeability : JIS It applied to the approach of P8117 correspondingly.

(3) Glossiness : JIS 75-degree glossiness of a coating side was measured according to the approach of P8142.

(4) Image glossiness : the record test was performed using the Ricoh Co., Ltd. make and trade name ATIJI 5330. The copy manuscript used that whose rate of halftone dot area is 10 - 100%, and image glossiness measured the glossiness of 20% of rates of halftone dot area, 60%, and 100% of part.

[0020] (5) Glossiness assessment : especially, O and the same thing were made into ** and the low thing was made into x for what has the image glossiness of the halftone

section higher than the glossiness of the blank paper section.

(6) Coat layer reinforcement : what can see O and a little what a picking does not generate by print-speed 1.2 m/sec in the ink tuck 10 and the amount of ink of 0.025 cc was made into ** using the IGT printability tester (A-trade name IGT 1 mold, product made from IGT), and what is taken thoroughly was made into x.

(7) Blister : what foaming is not visually regarded as by the solid image section was made into O, and that to which it is foaming was made into x.

[0021] Paper making of the pulp which added the whiting 10 section, the cation-ized starch 1 section, and the sizing compound 0.1 section (alkyl ketene dimer) was carried out to the pulp slurry which consists of the broad-leaved-tree-bleached-kraft-pulp (L-BKP) 100 section of 400 cc (csf) of degrees of beating as example 1 stencil, and the coating stencil of basis weight 92 g/m2 was obtained. The coating liquid presentation was used as the pigment, and the 80 sections and the 1st class kaolin (made in [EMC company] trade name ultra White 90) were added as the 20 sections and a binder, it added the calcium stearate 2 section for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g) as the styrene butadiene system latex 5 section and the casein 5 section, and a release agent, and coating liquid of 43% of solid content was adjusted. While coating of the obtained coating liquid was carried out so that desiccation solid content might become the above-mentioned stencil with 10 g/m2 by the roll coater, coagulation processing was subsequently carried out in 10% water solution of zinc formate as a coagulant and the paint film was in the damp or wet condition, sticking-by-pressure desiccation was carried out at the cast drum which has the mirror plane heated at 100 degrees C, and the record form of basis weight 102 g/m2 was obtained.

[0022] an example 2 coating-liquid presentation -- as a pigment, the 80 sections and the 1st class kaolin (made in [EMC company] trade name ultra White 90) were added as the 20 sections and a binder, the calcium stearate 2 section was added for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g) as the styrene butadiene system latex 15 section and the casein 15 section, and a release agent, and coating liquid of 42% of solid content was adjusted. Coating was carried out so that desiccation solid content might become the coating stencil (basis weight 92 g/m2) which used the obtained coating liquid in the example 1 with 15 g/m2, and the record form of basis weight 107 g/m2 was obtained like the example 1.

[0023] As a pigment, the synthetic silica (trade name fine seal SP-20, Tokuyama Soda Co., Ltd. make, and specific-surface-area 30m2/g) was added as the 100 sections and a

binder, it added the calcium stearate 2 section as the styrene butadiene system latex 20 section and the casein 20 section, and a release agent, and the example 3 coating-liquid presentation adjusted coating liquid of 46% of solid content. Coating was carried out so that it might become desiccation solid content 10 g/m2 in the coating stencil which used the obtained coating liquid in the example 1, and the record form of basis weight 102 g/m2 was obtained like the example 1.

[0024] In example 4 example 3, the synthetic silica was changed to the thing of specific-surface-area of 600m 2/g (trade name Syloid 600, product made from Fuji DEVISON), as the 100 sections, it considered as the styrene butadiene system latex 23 section and the casein 20 section as a binder, the calcium stearate 2 section was added as a release agent, and coating liquid of 40% of solid content was adjusted. Coating was carried out so that it might become desiccation solid content 5 g/m2 in the coating stencil which used the obtained coating liquid in the example 1, and the record form of basis weight 97 g/m2 was obtained like the example 1.

[0025] An example 5 coating-liquid presentation is a pigment. The 30 sections were added for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g), the 40 sections and a calcium carbonate (trade name brilliant 15, Shiroishi industrial company make) were added as the 30 sections and a binder, the calcium stearate 2 section was added for the 1st class kaolin (made in [EMC company] trade name ultra White 90) as the styrene butadiene system latex 15 section and the casein 10 section, and a release agent, and coating liquid of 54% of solid content was adjusted. Coating was carried out so that it might become the coating stencil which used the obtained coating liquid in the example 1 with desiccation solid content 12 g/m2, and the record form of basis weight 104 g/m2 was obtained like the example 1.

[0026] Paper making of the pulp which added the whiting 10 section, the cation-ized starch 1 section, and the sizing compound 0.1 section (alkyl ketene dimer) was carried out to the pulp slurry which consists of the broad-leaved-tree-bleached-kraft-pulp (L-BKP) 100 section of 400 cc of degrees of beating as example 6 stencil, and the coating stencil of basis weight 69 g/m2 was obtained. A coating liquid presentation is a pigment. A synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g) The 30 sections, The 1st class kaolin (made in [EMC company] trade name ultra White 90) The 40 sections, The 20 sections and an organic pigment (trade name BONKOTO PP-1100, large Japanization study company make) for a calcium carbonate (trade name brilliant 15, Shiroishi industrial company make) The ten sections, The styrene butadiene system latex 15 section and the casein 15 section

were adjusted as a binder, and calcium stearate 2 ****** and coating liquid of 55% of solid content were adjusted as a release agent. Coating of the obtained coating liquid was carried out so that desiccation solid content might become the above-mentioned stencil with 40 g/m2, and the record form of basis weight 109 g/m2 was obtained like the example 1.

[0027] The record form of basis weight 95.5 g/m2 was obtained like the example 1 except having carried out coating so that it might become desiccation solid content 3.5 g/m2 in example of comparison 1 example 1.

[0028] In example of comparison 2 example 5, the pigment presentation in coating liquid was the same, and the styrene butadiene system latex 2 section and the casein 2 section were adjusted as a binder, and it adjusted calcium stearate 2 ****** and coating liquid of 50% of solid content as a release agent. Coating was carried out so that it might become desiccation solid content 12 g/m2 in the coating stencil which used the obtained coating liquid in the example 1, and the record form of basis weight 104 g/m2 was obtained like the example 1.

[0029] In example of comparison 3 example 5, the pigment presentation in coating liquid was the same, and the styrene butadiene system latex 30 section and the casein 30 section were adjusted as a binder, and it adjusted calcium stearate 2 ****** and coating liquid of 50% of solid content as a release agent. Coating was carried out so that it might become desiccation solid content 20 g/m2 in the coating stencil which used the obtained coating liquid in the example 1, and the record form of basis weight 112 g/m2 was obtained like the example 1.

[0030] An example of comparison 4 coating-liquid presentation is a pigment. The five sections were added for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g), the 40 sections and a calcium carbonate (trade name brilliant 15, Shiroishi industrial company make) were added as the 55 sections and a binder, the calcium stearate 2 section was added for the 1st class kaolin (made in [EMC company] trade name ultra White 90) as the styrene butadiene system latex 15 section, the casein 10 section, and a release agent, and coating liquid of 58% of solid content was adjusted. Coating was carried out so that it might become the coating stencil which used the obtained coating liquid in the example 1 with desiccation solid content 15 g/m2, and the record form of basis weight 107 g/m2 was obtained like the example 1.

[0031] An example of comparison 5 coating-liquid presentation is a pigment. The 25 sections were added for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g), the 40 sections and a calcium

carbonate (trade name brilliant 15, Shiroishi industrial company make) were added as the 35 sections and a binder, the calcium stearate 2 section was added for the 1st class kaolin (made in [EMC company] trade name ultra White 90) as the styrene butadiene system latex 15 section, the casein 15 section, and a release agent, and coating liquid of 58% of solid content was adjusted. Coating was carried out so that it might become the coating stencil which used the obtained coating liquid in the example 1 with desiccation solid content 15 g/m2, and the record form of basis weight 107 g/m2 was obtained like the example 1.

[0032] The record form of basis weight 129 g/m2 was obtained like the example 1 except having carried out coating so that it might become desiccation solid content 60 g/m2 in example of comparison 6 example 6.

[0033] An example of comparison 7 coating-liquid presentation is a pigment. The 30 sections were added for the synthetic silica (trade name FK700, Degussa make, and specific-surface-area 700m2/g), the 40 sections and a calcium carbonate (trade name brilliant 15, Shiroishi industrial company make) were added as the 30 sections and a binder, the calcium stearate 2 section was added for the 1st class kaolin (made in [EMC company] trade name ultra White 90) as the styrene butadiene system latex 11 section, the casein 11 section, and a release agent, and coating liquid of 60% of solid content was adjusted. Coating was carried out so that it might become the coating stencil which used the obtained coating liquid in the example 1 with desiccation solid content 11 g/m2, and the record form of basis weight 103 g/m2 was obtained like the example 1.

[0034] The 30 sections and a calcium carbonate (trade name brilliant 15, Shiroishi industrial company make) were added for the synthetic silica (trade name Syloid 404, product [made from Fuji DEVISON], and specific-surface-area 300m2/g) as a pigment, it added the styrene butadiene system latex 22 section and the oxidized starch 2 section as the 70 sections and a binder, and the example of comparison 8 coating-liquid presentation adjusted coating liquid of 56% of solid content. By the roll coater, coating was carried out and it dried so that it might become the coating stencil which used the obtained coating liquid in the example 1 with desiccation solid content 10 g/m2, and the coated paper of basis weight 102 g/m2 was obtained. Subsequently, smooth nature was given to the coating front face using the supercalender, and the record form was obtained.

[0035]

[Effect of the Invention] As mentioned above, in the printer and copying machine of an electrophotography method, blank paper glossiness is high at this invention, the glossiness of the image section, especially the gloss of the halftone section are higher

than the glossiness of the blank paper section, and record image quality is good, there are the waist and **, and the good coated paper for electrophotography was obtained. the quality of paper of the coated paper obtained in said example and the example of a comparison next -- a test result and an image assessment result are collectively shown in a table 1 and a table 2.

[0036]

[A table 1]

[0037]

[A table 2]

表１　塗料処方及び紙質結果

	塗液処方		合成シリカの比表面積	塗工量	密度	透気度	光沢度
	顔料 合成シリカ／カオリン／炭カル／有機顔料	バインダー ラテックス／カゼイン	(m^2／g)	(g／m^2)	(g／cm^3)	(秒)	(%)
実施例1	80／20／0／0	5／5	300	10	0.89	180	60
実施例2	80／20／0／0	15／15	300	15	0.90	250	62
実施例3	100／0／0／0	20／20	30	10	0.91	500	55
実施例4	100／0／0／0	23／20	600	5	0.89	420	53
実施例5	30／40／30／0	15／10	300	12	0.91	2500	73
実施例6	30／40／20／10	15／15	300	40	0.87	1900	71
比較例1	80／20／0／0	15／15	300	3.5	0.86	70	30
比較例2	30／40／30／0	2／2	300	12	0.89	1500	50
比較例3	30／40／30／0	30／30	300	20	0.91	9800	80
比較例4	5／40／55／0	15／10	300	15	0.91	3900	86
比較例5	25／40／35／0	15／15	300	15	0.90	3700	75
比較例6	30／40／20／10	15／15	300	60	0.98	6000	78
比較例7	30／40／30／0	11／11	700	11	0.91	1400	54
比較例8	30／0／70／0	22／0	300	10	1.29	4500	38

表 2　塗料処方及び画像評価結果

	塗液処方		合成シリカの比表面積	塗工量	光沢度	画像部光沢度 (%)			光沢度評価バランス	コート層強度	ブリスター
	顔料	バインダー				網点面積率 (%)					
	合成シリカ/リン/カオリン/顔料	ラテックス/カゼイン	(m^2/g)	(g/m^2)	(%)	20	60	100			
実施例1	80/20/0/0	5/5	300	10	60	68	85	92	○	○	○
実施例2	80/20/0/0	15/15	300	15	62	67	86	91	○	○	○
実施例3	100/0/0/0	20/20	30	10	55	61	84	93	○	○	○
実施例4	100/0/0/0	23/20	600	5	53	63	82	91	○	○	○
実施例5	30/40/30/0	15/10	300	12	73	76	85	92	○	○	○
実施例6	30/40/20/10	15/15	300	40	71	73	84	94	○	○	○
比較例1	80/20/0/0	15/15	300	3.5	30	25	32	64	×	○	○
比較例2	30/40/30/0	2/2	300	12	50	55	73	83	○	×	○
比較例3	30/40/30/0	30/30	300	20	80	82	81	70	×	○	×
比較例4	5/40/55/0	15/10	300	15	85	80	65	83	×	○	○
比較例5	25/40/35/0	15/15	300	15	75	74	86	90	×	○	○
比較例6	30/40/20/10	15/15	300	60	78	78	90	80	△	△	×
比較例7	30/40/30/0	11/11	700	11	54	54	60	75	△	○	○
比較例8	30/0/70/0	22/0	300	10	38	33	56	66	×	○	×

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(54)【発明の名称】電子写真用転写紙

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(57)【特許請求の範囲】

【請求項１】　支持体上に少なくとも１層以上の層構成を有する記録層を設けた転写紙に於いて、該記録層の最表層に比表面積が２０乃至６００㎡／ｇの合成シリカを顔料１００重量部中に３０乃至１００重量部含有し、且つ顔料１００重量部に対して結着剤を１０乃至５０重量部を配合した塗液をキャストコーティング法を用いて塗工量が片面当り乾燥固形分で５乃至５０ｇ／㎡塗工されていることを特徴とする電子写真用転写紙。

【請求項２】　塗工表面の７５度鏡面白紙光沢度が５０％以上であることを特徴とする請求項１に記載の電子写真用転写紙。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は電子写真用転写紙に関するもので、特に電子写真方式のプリンターおよび複写機に適する高光沢の転写紙に関するものである。

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【０００２】

【従来の技術】一般の商業印刷や高級印刷に於いてはオフセット印刷が主流で、アート紙、コート紙及びキャストコート紙等の塗工紙が主に使用されている。これは塗工紙の表面が非常に平滑であるため、印刷時にブランケットロールと接触した際にロールから塗工紙へのインキの転移性が良好で画像の再現性が高いことと、画像の光沢が高く色の再現性が良好であるためである。一方、このような塗工紙は一般には電子写真用転写紙としては使用されていないのが現状である。この理由として、塗工紙は非常に平滑であるのでコピー時等に感光体と均一に密着するため、理論上は良好なトナー転写像が得られる筈であるが、実際には複写機等に適用した場合、画像が

荒れるという報告がある（紙パ技術タイムス，27，No.4（1984）31－36）。

【０００３】このことは、電子写真方式の画像が熱により定着されるために平滑な印刷用塗工紙にブリスター（塗工層のフクレ）が発生することがその原因の一つである（特開昭６２－１９８８７６号）。この現象は印刷用塗工紙の通気性が低いために塗工紙中の水分が水蒸気となり加熱膨張する時に紙層が剥がれることによるとされている。また印刷用塗工紙を電子写真用転写紙に使用した場合、表面が平滑な為にロールとの間でスリップを生じたり、或いは腰の弱さやカールにより走行性にトラブルを生じ易い。このように通常の印刷用塗工紙は印刷適性を満足するように用紙を設計したもので、電子写真方式のプリンターおよび複写機に使用する電子写真用転写紙適性を満足するように設計されていない。

【０００４】印刷用塗工紙のこれ等の技術的問題を解決して始めて塗工紙の電子写真用転写紙への使用は高画質な画像を得る方法としても有効となると考えられる。塗工紙表面への高平滑性の付与は一般的にスーパーカレンダー等を用いて、高い圧力で表面を潰すことによって行なわれるため、紙質的には塗工紙は上質紙に比較して腰が弱く且つ密度が高くなり、ボリューム感に欠ける（嵩がない）等の点で劣っている。

【０００５】塗工紙の電子写真用転写紙への応用例としては高電気抵抗樹脂を主体とする塗液を塗工したもの（特公昭５７－５３５９２号、特公昭５７－５５１３９号、特公昭５８－２６０２６号）があるが、塗工量が少なく平滑度も低い為、普通紙に近く高画質用には適していない。またこの場合、バインダーに対する顔料配合量が一般の印刷用塗工紙に比較して少なく、単に塗工量を多くしただけでは印刷用塗工紙並みの高平滑は得られず、また用紙と用紙の間でブロツキング等のトラブルを生じる為、一般的に電子写真用としては不向きである。その他、ブリスターを防ぐ為、塗工紙の表面平均粗さを２．０μｍ以下とし、透気度を４０００秒以下とする等の例もある（特開昭６２－１９８８７５号、特開昭６２－１９８８７６号）。

【０００６】他にブリスターを防ぐ方法としては特定の透気度を有する原紙の両面に透湿度５０～５００ｇ／ｍ^2・２４ｈｒの範囲に調整した水蒸気透湿性の良い塗工層を塗工量として２～５ｇ／ｍ^2 設ける等の例がある（特開平１－２４５２６５号）。しかしながら、これ等は白紙光沢度が低く、スーパーカレンダーで平滑化している為、上質紙並みの腰と嵩に至らず、また塗工量が少ない為に普通紙に近く、充分な白紙光沢度が得られないので高級印刷紙並みの画質とするには不充分であった。

【０００７】これ等の欠点を改善する為に我々は先に特願平２－１３１２５３号の発明に於いて、用紙の画像品質に就いて、用紙の水分と透気度と画質との関連性及び実機での製品の経時変化に就いて検討を重ねた結果、塗液中に内部に空隙を有する非造膜性樹脂を顔料重量の５～２５重量％含有させ、塗工紙に於いては水分を４～６％とし、透気度を４０００秒以下、更に塗工紙の密度を１．１ｇ／ｃｍ^3 以下とすることにより品質の安定した製品の製造が可能となり、且つ走行性に優れ良好な画像を有する塗工紙が得られたことを開示した。しかしながらこれ等は高級印刷紙並みの画質には至らず、特にハーフトーン部の光沢度が白紙部の光沢度より低く、またハーフトーン部からベタ部にかけて高い画像光沢度を均一に得るにはまだ不充分であった。

【０００８】

【発明が解決しようとする課題】本発明はこれ等の欠点を改善して電子写真方式のプリンター及び複写機に於いてブリスターが無く、白紙光沢度が高く、且つ画像部の光沢度特にハーフトーン部の光沢度が白紙部の光沢度よりも高い画像が得られる電子写真転写用塗工紙を提供することにある。

【０００９】

【課題を解決するための手段】本発明は、前記の課題を解決する為に、支持体上に少なくとも１層以上の層構成を有する記録層を設けた転写紙に於いて、該記録層の最表層に比表面積が２０乃至６００ｍ^2 ／ｇの合成シリカを顔料１００重量部中に３０乃至１００重量部を含有し、結着剤を顔料１００重量部に対して１０乃至５０重量部を配合した塗液をキャストコーティング法により片面当りの乾燥重量で５乃至５０ｇ／ｍ^2 塗工した転写紙に関し、更に塗工表面の７５度鏡面光沢度が５０％以上であるものは更に好ましい特徴を有する転写紙に係るものである。

【００１０】本発明に於いて、合成シリカを顔料１００重量部中３０重量部配合した塗工紙の表面を単にスーパーカレンダーで平滑化処理（特開昭６２－１９８８７６号）すると紙の腰が弱くなり、充分な平滑性及び白紙光沢度が得られない。また紙の通気性が低下してブリスターの原因となる。更には画像部の光沢度特にハーフトーン部の画像光沢度が白紙部の光沢度よりも低くなって了う。これに対して、キャストコーティング法で塗工層を設けることにより白紙光沢度が高く、紙の腰の低下が無く、また紙の通気性を損なうことも無くブリスターが抑制され、画像光沢度特にハーフトーン部の画像光沢度が大幅に向上する。

【００１１】この理由の詳細は定かではないが、一般的に塗工紙の塗料に用いられる顔料の比表面積が２～３ｍ^2 ／ｇ、多くても１０ｍ^2 ／ｇを超えないのに対して本発明で用いる合成シリカの比表面積は２０ｍ^2 ／ｇ乃至６００ｍ^2 ／ｇと非常に大きく、一般的に用いられる顔料よりも遥かに大きい。比表面積の大きい合成シリカを記録層に含有することによって該記録層中に空隙が非常に多くなる。この空隙に溶融したトナーが適度に吸収されることにより画像表面の凹凸が減少し表面の乱反射が

少なくなり、画像光沢度が高くなると推察される。この結果、合成シリカを含むキャストコート紙に於いて白紙光沢度が高く、且つ画像光沢度が白紙光沢度よりも高い、特にハーフトーン部の画像光沢度の高い転写紙を得ることに成功した。合成シリカの比表面積は３００m^2／ｇ位までのものが特に好適である。比表面積が６００m^2／ｇよりも大きい場合には理由は定かではないが、特にハーフトーン部の画像光沢度が白紙部の光沢度より低くなる為、本発明には適さない。

【００１２】本発明で用いる合成シリカとは、一般に非晶質シリカ、無定形シリカ、無水ケイ酸、含水ケイ酸、微粉末シリカ、或いはホワイトカーボン等と呼称されるもので、Ｓｉ－Ｏの網目状構造から成り、一定の結晶構造を持たないケイ酸類である。溶融したトナーの吸収性の観点から比表面積が２０m^2／ｇ乃至６００m^2／ｇの合成シリカを使用する。本発明で用いる合成シリカは、湿式法、乾式法、エアロゲル法等の製造方法には特に限定されない。塗液中の合成シリカの配合量は、顔料１００重量部中に３０重量部乃至１００重量部である。合成シリカの配合量が３０重量部よりも少ない場合には溶融したトナーの記録層中への吸収が不充分となり、特にハーフトーン部の画像光沢度が白紙の光沢度よりも低くなる。

【００１３】上記顔料に更に顔料を併用することができるが、その種類は特に限定されない。併用可能な顔料としては無機顔料では、カオリンクレー，重質炭酸カルシウム，軽質炭酸カルシウム，水酸化アルミニウム，サチンホワイト，二酸化チタン，焼成クレー，酸化亜鉛，硫酸バリウム，タルク，コロイダルシリカ，等。有機顔料としてはポリスチレン，ポリメチルスチレン，等のスチレン系樹脂，ポリメタクリル酸メチル，ポリアクリロニトリル等のアクリル系樹脂の他、ポリ塩化ビニル，ポリカーボネート、等が例示され、これ等を任意の割合で併用することができる。無機顔料ではカオリンクレー等の板状の粒子形態を有するものは通気性を低下させブリスターの原因となるので注意を要する。有機顔料では硬度，弾力性及び耐熱性等の点でスチレン系樹脂，アクリル系樹脂またはスチレン－アクリル系共重合体樹脂が好ましく、特にポリスチレンまたはスチレン－メタクリル酸メチル共重合体から成る微小中空粒子は塗工表面の平滑性が出易く、また塗工層の密度低下に有効である。

【００１４】結着剤としては顔料，原紙との接着力が強く用紙間のブロッキングを起こさない樹脂，エマルジョン，ラテックス，天然高分子を単独或いは混合して使用することができる。例えば、ポリビニルアルコールや酸化デンプン，エステル化デンプン，酵素変性デンプン，カチオン化デンプンなどのデンプン類，カゼイン，大豆タンパク質類，カルボキシメチルセルロース，ヒドロキシエチルセルロース等の繊維素誘導体，スチレン－アクリル系樹脂，スチレン－ブタジエン系樹脂，酢ビ系樹脂，アクリル系樹脂等がある。

【００１５】この他、色相を調整する為に染料を配合したり、視感的白さを向上させる目的で蛍光染料を配合することも可能である。更に塗液中に必要に応じて分散剤や消泡剤，離型剤，ｐＨ調整剤，潤滑剤，保水剤，防腐剤等の各種助剤を少量添加することができる。塗液組成中の結着剤の配合量は顔料１００重量部に対して１０重量部乃至５０重量部である。結着剤の配合量が１０重量部未満の場合には塗膜強度が弱くなり、５０重量部を超えると塗工紙の透気度が高くなり過ぎてブリスターの原因となる。

【００１６】塗工量は片面当りの乾燥重量が５～５０ｇ／m^2，好ましくは８～３０ｇ／m^2となるようにオンマシン或いはオフマシンコーターで単層または多層塗工される。塗工量が５ｇ／m^2より少ない場合には原紙表面の被膜が不充分となり、高い白紙光沢度を得ることができない。また塗工量が５０ｇ／m^2を超える場合、紙の密度が増して透気度が高くなり、ブリスターの発生や紙の腰が弱くなり走行性にトラブルを生じ電子写真用転写紙としての機能を失う等の欠点がある。キャストコーティング法による製造方法としては、凝固法，再湿潤法，湿潤法が知られているが何れの方法でも本発明に適用できる。記録層を得る為の塗工方式に就いても特に限定されるものでなく、一般の塗工方式、例えば各種ブレード塗工，ロール塗工，エアーナイフ塗工，バー塗工等の塗工方式が使用できる。

【００１７】凝固法によるキャスト塗工法を用いる場合に使用される凝固剤としては蟻酸，酢酸，クエン酸，酒石酸，乳酸，塩酸及び硫酸のカルシウム，カリウム，亜鉛，バリウム，鉛，マグネシウム，カドミウム，及びアルミニウム等の各塩、ほう砂，ほう酸などが一般的であるが、特に限定されない。また結着剤はこれ等凝固剤と効果的に凝固するものを選んで用いると塗工速度の向上や塗工面の仕上げ状態の向上に効果的である。原紙としては酸性及び中性の上質紙や中質紙などが使用できるが、塗工原紙としての塗工適性を備える為に原料の配合，調整，製造条件を公知の方法（特公昭５５－４７３８５号）で調整した用紙が好ましい。

【００１８】

【実施例】以下に実施例を挙げて本発明をより具体的に説明するが、本発明はこれ等の実施例に限定されるものではない。なお、実施例中の部は全て重量部を示す。実施例中の測定は次のようにして行なった。

【００１９】（１）密度：ＪＩＳ　Ｐ８１１８の方法に準じた。

（２）透気度：ＪＩＳ　Ｐ８１１７の方法に準じた。

（３）光沢度：ＪＩＳ　Ｐ８１４２の方法に準じて塗工面の７５°光沢度を測定した。

（４）画像光沢度：リコー社製，商品名アーティジ５３３０を用いて記録テストを行なった。コピー原稿は網点

面積率が１０～１００％のものを使用し、画像光沢度は網点面積率２０％，６０％，１００％の部分の光沢度を測定した。

【００２０】（５）光沢度評価：特にハーフトーン部の画像光沢度が白紙部の光沢度より高いものを○、同じものを△、低いものを×とした。

（６）コート層強度：ＩＧＴ印刷適性試験機（商品名ＩＧＴ　Ａ－１型、ＩＧＴ社製）を用い、インキタック１０、インキ量０．０２５ccで印刷速度１．２m／secでピッキングが発生しないものを○、若干見られるものを△、完全に取られるものを×とした。

（７）ブリスター：ベタ画像部に目視で発泡が見られないものを○、発泡しているものを×とした。

【００２１】実施例１

原紙として叩解度（csf）４００ccの広葉樹晒クラフトパルプ（Ｌ－ＢＫＰ）１００部から成るパルプスラリーに重質炭酸カルシウム１０部、カチオン化デンプン１部、サイズ剤０．１部（アルキルケテンダイマー）を添加した紙料を抄紙して坪量９２ｇ／㎡の塗工原紙を得た。塗液組成は顔料として、合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を８０部及び１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を２０部、結着剤としてスチレンブタジエン系ラテックス５部及びカゼイン５部、離型剤としてステアリン酸カルシウム２部を加え固形分４３％の塗液を調整した。得られた塗液を上記原紙にロールコーターで乾燥固形分が１０ｇ／㎡となるように塗工し、次いで凝固剤として蟻酸亜鉛１０％水溶液で凝固処理して塗膜が湿潤状態に有る間に１００℃に加熱した鏡面を有するキャストドラムに圧着乾燥し坪量１０２ｇ／㎡の記録用紙を得た。

【００２２】実施例２

塗液組成は顔料として、合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を８０部及び１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を２０部、結着剤としてスチレンブタジエン系ラテックス１５部及びカゼイン１５部、離型剤としてステアリン酸カルシウム２部を加え固形分４２％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙（坪量９２ｇ／㎡）に乾燥固形分が１５ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０７ｇ／㎡の記録用紙を得た。

【００２３】実施例３

塗液組成は顔料として、合成シリカ（商品名ファインシールＳＰ－２０、徳山曹達社製、比表面積３０㎡／ｇ）を１００部、結着剤としてスチレンブタジエン系ラテックス２０部及びカゼイン２０部、離型剤としてステアリン酸カルシウム２部を加え、固形分４６％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１０ｇ／㎡になるように塗工し、実施例１と同様にして坪量１０２ｇ／㎡の記録用紙を得た。

【００２４】実施例４

実施例３に於いて合成シリカを比表面積６００㎡／ｇ（商品名サイロイド６００、富士デヴィソン社製、）のものに換え１００部として、結着剤としてスチレンブタジエン系ラテックス２３部及びカゼイン２０部とし、離型剤としてステアリン酸カルシウム２部を加え、固形分４０％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分５ｇ／㎡になるように塗工し、実施例１と同様にして坪量９７ｇ／㎡の記録用紙を得た。

【００２５】実施例５

塗液組成は顔料として、合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を３０部、１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を４０部及び炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を３０部、結着剤としてスチレンブタジエン系ラテックス１５部及び、カゼイン１０部、離型剤としてステアリン酸カルシウム２部を加え、固形分５４％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１２ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０４ｇ／㎡の記録用紙を得た。

【００２６】実施例６

原紙として叩解度４００ccの広葉樹晒クラフトパルプ（Ｌ－ＢＫＰ）１００部から成るパルプスラリーに重質炭酸カルシウム１０部、カチオン化デンプン１部、サイズ剤０．１部（アルキルケテンダイマー）を添加した紙料を抄紙して坪量６９ｇ／㎡の塗工原紙を得た。塗液組成は顔料として、合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を３０部、１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を４０部、炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を２０部及び有機顔料（商品名ボンコートＰＰ－１１００、大日本化学社製）を１０部、結着剤としてスチレンブタジエン系ラテックス１５部及びカゼイン１５部、離型剤としてステアリン酸カルシウム２部加え、固形分５５％の塗液を調整した。得られた塗液を上記原紙に乾燥固形分が４０ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０９ｇ／㎡の記録用紙を得た。

【００２７】比較例１

実施例１に於いて乾燥固形分３．５ｇ／㎡となるように塗工した以外は実施例１と同様にして坪量９５．５ｇ／㎡の記録用紙を得た。

【００２８】比較例２

実施例５に於いて塗液中の顔料組成は同じで、結着剤としてスチレンブタジエン系ラテックス２部及びカゼイン２部、離型剤としてステアリン酸カルシウム２部加え、固形分５０％の塗液を調整した。得られた塗液を実施例

１で用いた塗工原紙に乾燥固形分１２ｇ／㎡になるように塗工し、実施例１と同様にして坪量１０４ｇ／㎡の記録用紙を得た。

【００２９】比較例３

実施例５に於いて塗液中の顔料組成は同じで、結着剤としてスチレンブタジエン系ラテックス３０部及びカゼイン３０部、離型剤としてステアリン酸カルシウム２部加え、固形分５０％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分２０ｇ／㎡になるように塗工し、実施例１と同様にして坪量１１２ｇ／㎡の記録用紙を得た。

【００３０】比較例４

塗液組成は顔料として合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を５部、１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を４０部及び炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を５５部、結着剤としてスチレンブタジエン系ラテックス１５部、カゼイン１０部、離型剤としてステアリン酸カルシウム２部を加え、固形分５８％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１５ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０７ｇ／㎡の記録用紙を得た。

【００３１】比較例５

塗液組成は顔料として合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を２５部、１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を４０部及び炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を３５部、結着剤としてスチレンブタジエン系ラテックス１５部、カゼイン１５部、離型剤としてステアリン酸カルシウム２部を加え、固形分５８％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１５ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０７ｇ／㎡の記録用紙を得た。

【００３２】比較例６

実施例６に於いて乾燥固形分６０ｇ／㎡となるように塗工した以外は実施例１と同様にして坪量１２９ｇ／㎡の記録用紙を得た。

【００３３】比較例７

塗液組成は顔料として合成シリカ（商品名ＦＫ７００、デグーサ社製、比表面積７００㎡／ｇ）を３０部、１級カオリン（商品名ウルトラホワイト９０、ＥＭＣ社製）を４０部及び炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を３０部、結着剤としてスチレンブタジエン系ラテックス１１部、カゼイン１１部、離型剤としてステアリン酸カルシウム２部を加え、固形分６０％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１１ｇ／㎡となるように塗工し、実施例１と同様にして坪量１０３ｇ／㎡の記録用紙を得た。

【００３４】比較例８

塗液組成は顔料として合成シリカ（商品名サイロイド４０４、富士デヴィソン社製、比表面積３００㎡／ｇ）を３０部、炭酸カルシウム（商品名ブリリアント１５、白石工業社製）を７０部、結着剤としてスチレンブタジエン系ラテックス２２部及び、酸化デンプン２部を加え固形分５６％の塗液を調整した。得られた塗液を実施例１で用いた塗工原紙に乾燥固形分１０ｇ／㎡となるようにロールコーターで塗工し、乾燥して、坪量１０２ｇ／㎡の塗工紙を得た。次いでスーパーカレンダーを用いて塗工表面に平滑性を付与して記録用紙を得た。

【００３５】

【発明の効果】以上、本発明で電子写真方式のプリンター及び複写機に於いて白紙光沢度が高く、且つ画像部の光沢度特にハーフトーン部の光沢が白紙部の光沢度よりも高く、また記録画質が良好で腰及び嵩があり良好な電子写真用塗工紙が得られた。次ぎに前記実施例及び比較例にて得られた塗工紙の紙質試験結果及び画像評価結果を纏めて表１及び表２に示す。

【００３６】

【表１】

【００３７】

【表２】

表１　塗料処方及び紙質結果

	塗液処方		合成シリカの比表面積	塗工量	密度	透気度	光沢度
	顔料 合成シリカ／カオリン／炭カル／有機顔料	バインダー ラテックス／カゼイン	(m^2／g)	(g／m^2)	(g／cm^3)	(秒)	(%)
実施例1	80／20／0／0	5／5	300	10	0.89	180	60
実施例2	80／20／0／0	15／15	300	15	0.90	250	62
実施例3	100／0／0／0	20／20	30	10	0.91	500	55
実施例4	100／0／0／0	23／20	600	5	0.89	420	53
実施例5	30／40／30／0	15／10	300	12	0.91	2500	73
実施例6	30／40／20／10	15／15	300	40	0.87	1900	71
比較例1	80／20／0／0	15／15	300	3.5	0.86	70	30
比較例2	30／40／30／0	2／2	300	12	0.89	1500	50
比較例3	30／40／30／0	30／30	300	20	0.91	9800	80
比較例4	5／40／55／0	15／10	300	15	0.91	3900	86
比較例5	25／40／35／0	15／15	300	15	0.90	3700	75
比較例6	30／40／20／10	15／15	300	60	0.98	6000	78
比較例7	30／40／30／0	11／11	700	11	0.91	1400	54
比較例8	30／0／70／0	22／0	300	10	1.29	4500	38

表２　塗料処方及び画像評価結果

	塗被処方			合成シリカの比表面積	塗工量	光沢度	画像部光沢度			光沢度評価バランス	コート層強度	ブリスター
	顔料 合成シリカ/リン/カル/顔料	有機 カオ/ポ/ポ/ポ	バインダー ラテックス/カゼイン	(m²/g)	(g/m²)	(%)	網点面積率(%) 20	60	100			
実施例1	80/20/0	0/0	5/5	300	10	60	68	85	92	○	○	○
実施例2	80/20/0	0/0	15/15	300	15	62	67	86	91	○	○	○
実施例3	100/0	0/0	20/20	30	10	55	61	84	93	○	○	○
実施例4	100/0	0/0	23/20	600	5	53	63	82	91	○	○	○
実施例5	30/40/30	0/0	15/10	300	12	73	76	85	92	○	○	○
実施例6	30/40/20	10/0	15/15	300	40	71	73	84	94	○	○	○
比較例1	80/20/0	0/0	15/15	300	3.5	30	25	32	64	×	○	○
比較例2	30/40/30	0/0	2/2	300	12	60	55	73	83	○	×	○
比較例3	30/40/30	0/0	30/30	300	20	80	82	81	70	×	○	×
比較例4	5/40/55	0/0	15/10	300	15	85	80	65	83	×	○	○
比較例5	25/40/35	0/0	15/15	300	15	75	74	86	90	×	○	○
比較例6	30/40/20	10/0	15/15	300	60	78	78	90	80	△	△	×
比較例7	30/40/30	0/0	11/11	700	11	54	54	60	75	△	○	○
比較例8	30/0/70	0/0	22/0	300	10	38	33	56	66	×	○	×

フロントページの続き

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(56)参考文献　特開　昭54－55438（ＪＰ，Ａ）